

**PRINCE WILLIAM SOUND MANAGEMENT AREA
1995 SHELLFISH ANNUAL MANAGEMENT REPORT**



by

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INTRODUCTION

The Prince William Sound (PWS) Management Area (Area E) is comprised of all waters of Prince William Sound and the Gulf of Alaska from Cape Suckling to the east and Cape Fairfield to the west. This report documents the most recently completed shellfish fisheries in the area. The fisheries are the 1995 sidestripe shrimp *Pandalopsis dispar* trawl fishery and the 1995 weathervane scallop *Patinopecten caurinus* dredge fishery. Octopus and squid harvested as bycatch in the groundfish and shrimp trawl fisheries are also reported. Finally, razor clams *Siliqua patula* harvested under subsistence regulations are reported.

The following fisheries are also reviewed in this report although the 1995 - 1996 commercial seasons were not opened. The 1996 Tanner crab *Chionoecetes bairdi*, the 1995 - 1996 king crab, the 1995 Dungeness crab *Cancer magister*, and the 1995 spot shrimp *Pandalus platyceros* fisheries were closed due to low stock abundance and poor recruitment.

Shellfish landings from the sidestripe shrimp trawl fishery in Area E during 1995 included 97,895 lb of trawl shrimp. Harvest data from the 1995 weathervane scallop fishery are confidential. A department policy on confidentiality states that any time a fishery or statistical area has fewer than three participants, catch information may not be made public. Table 1 lists emergency orders affecting area fisheries during 1995.

The estimated exvessel value for the shrimp trawl fishery was \$202,000. The weathervane scallop fishery value is confidential.

TANNER CRAB FISHERY

Introduction

The Prince William Sound Management Area is divided into 4 Tanner crab management districts (Figure 1). The Northern and Hinchinbrook Districts include most of the waters inside PWS proper while the Eastern and Western Districts encompass the Gulf of Alaska portion of the management area and southwestern PWS.

Tanner crabs have historically been the primary shellfish resource in terms of landed weight. The average annual harvest in the past 27 years is approximately 2.8 million lb. This figure includes 10 years when no harvest occurred. The harvest has been equally divided between the Gulf of Alaska and Prince William Sound (PWS).

Tanner crab fishing began in 1968 when 1.2 million lb were landed. The fishery peaked at 13.9 million lb in the 1972-73 season prior to implementation of the minimum legal size in 1976. The area experienced decreasing harvests during the late 70's and early 80's. These decreasing harvests preceded district closures during the 1984 and 1985 seasons, small postrecruit fisheries from 1986 to 1988, and full area closures from 1989 to 1995 (Appendix A).

There are 3 reasonable explanations for the decline in abundance of the Prince William Sound Tanner crab stock:

- 1) The overharvest of immature and mature males and the illegal harvest of females prior to the adoption of the minimum size limit of 5.3 inches in 1976. For example, in 1974, 3.8 million lb were harvested of which 2.7 million lb were below the current minimum size limit.

2) Lengthy seasons also had significant adverse effects on the stocks due to excessive trapping, handling, and lost gear. Seasons from 1974 through 1981 lasted 7 months.

3) Unfavorable environmental conditions: warming ocean temperatures may be a contributing factor to the sharp decline and continued low abundance of Tanner crabs in the management area by favoring the production of predators and providing suboptimal environmental conditions for survival of crab larvae.

The Tanner crab fishery in PWS is classified as "superexclusive". This term means that a boat validly registered to fish in the PWS registration area may not participate in any other Tanner crab fishery within the state during that registration year (August 1-July 31). Conversely, a boat validly registered to fish in another registration area may not fish in PWS during that registration year. Other regulations unique to the fishery are a 175 pot limit in Area waters west of 146° 40' West longitude. East of this line a 100 pot limit is in effect. The minimum legal size limit for Tanner crab in Area E is 135 mm (5.3 in). The fishery regulatory season dates are January 15 - March 31.

The department conducted annual pot surveys for Tanner crabs from 1976 to 1991. Survey data were used to establish an index of abundance and set harvest guidelines. In 1991 the department changed assessment techniques and began using trawls to survey Tanner crabs in PWS. The trawl survey has continued to the present.

1996 Season Summary

The commercial Tanner crab fishery in the PWS management area remained closed in 1996. Since 1991, the department's trawl survey has described a decreasing trend in the overall male stock component (Figure 2). From 1993 to 1995 all size classes except prerecruit-four and smaller experienced dramatic declines in the newshell segments of the respective classes. For

example, from 1993 to 1994, estimates of true recruit crabs declined from 54,000 to 4,000, true prerecruit-one crabs declined from 109,000 to 18,000, and true prerecruit-two crabs declined from 99,000 to 34,000. The 1995 estimate of total legal male crabs was 51,000, was approximately one half of the 1993 survey estimate and well below the historic low harvest of 226,000 crabs. Therefore, the stock remained in a depressed condition and could not support a sustainable fishery.

1997 Management Outlook

Based upon the continued decline in the estimate of true prerecruit-one crabs from the 1995 assessment, recruitment to the legal stock component is expected to remain extremely low in 1996. Skip molting remains a limiting factor in the prerecruit-one size class where 79,000 (94%) crabs are in an old shell condition. Recruitment is expected to remain at a very low level after 1996 because estimates of crabs from all true prerecruit age classes have declined. If weak year classes persist, the stock rebuilding process will be prolonged.

The propagation of weak year classes is a direct function of diminished reproductive capacity. The reduction in the Tanner stock was largely caused by the overharvest of legal and, sublegal males as well as the illegal harvest of female crabs during the lengthy seasons of the 1970's. The department plans to maintain maximum reproductive potential to insure recovery when ocean conditions favor shellfish production. In this context the short-term goal is to provide maximum reproductive potential, eliminate handling and trapping losses, and when possible allow small fisheries similar to the 1986 through 1988 seasons.

KING CRAB FISHERY

Introduction

Three species of king crabs are found in the Prince William Sound Management Area: red *Paralithodes camtschaticus*, blue *Paralithodes platypus*, and brown *Lithodes aequispina*. Red king crabs are sparsely distributed throughout PWS with historic concentrations occurring in eastern PWS and Hinchinbrook Entrance. Blue king crabs occur in the Port Wells - Harriman Fiord area with other small isolated pockets associated with glacial fjords in western PWS. Brown king crabs are found in central and western PWS at depths of 150-400 fathoms. Waters in the Gulf of Alaska portion of the management area have no documented concentrations except for a very sparse distribution of brown king crabs.

Catch reporting by species did not begin until the 1979-80 season (Appendix B). The harvest of nearly 300,000 lb in 1972 is believed to have primarily been blue king crabs. During the period 1979-1984 the stocks of both blue and red king crab declined. Fisheries for both species remained closed from the 1984-85 season to the 1991-92 season. These closures coincided with the development of the brown king crab fishery.

Fishery performance in the brown king crab fishery indicates that the stock of brown crab is small as evidenced by the low effort coupled with declines in average weight, size, and geographic distribution. The Alaska Board of Fisheries, at the spring 1988 meeting, adopted a guideline harvest range of 40,000 - 60,000 lb for brown king crab in Area E. This range was adopted to help stabilize the legal segment of the brown king crab stock from declines in average size, weight, and distribution that were experienced since the fishery began in 1982. In the short term this guideline may have been established too late because harvests in 1989-90 and 1991-92 did not attain the low end of this harvest range and the season was closed in 1992-93 and 1993-94 due to low abundance.

The abundance of red king crabs was ascertained during Tanner crab pot surveys. An annual index was conducted from 1977-91 to track the red king crab population. Presently red king crab abundance is assessed through catches from the Tanner crab trawl survey. Brown and blue king crab populations are assessed by commercial fishery dockside interviews and size frequency analysis of commercial catch samples.

The most recent king crab fishery in PWS occurred in 1994-95 for brown king crab. The prior fishery for brown king crab occurred in 1991-92 and interviews with fishermen indicated a potential for recruitment through the limited presence of undersized males on the grounds. Since the department does not survey brown king crab stocks, the 1994-95 fishery was informational in nature and designed to put the stock at minimal risk. The brown king crab fishery was delayed from the regulatory opening date of October 1 to November 1 in order to address apparent deadloss due to high water temperature and low salinity. The western portion of PWS was divided into two areas and the season was opened in each area for a period of 15 days. The southern area, comprising of waters west of 147°20' W. longitude and south of a line from Nellie Juan Light to Point Eleanor, was open November 1-15. The northern area, comprising waters west of 147°20' W longitude and north of the aforementioned line was open November 15-30. Two vessels participated in the fishery. Catch is confidential due to the low number of participants, however, both catch and catch rates were very low.

The king crab fishery in Area E is designated as superexclusive. The minimum legal carapace width for red and brown king crabs is 7.0 in (178 mm) and for blue king crab 5.9 in (150 mm). The regulatory season opens throughout Prince William Sound on October 1 and closes on December 20. A second season opens on January 15 and closes by regulation March 15. The split season allows a three week period when gear must be removed from the fishing grounds and eliminates the preemption of fishing locations prior to the Tanner crab fishery which opens January 15.

1995-96 Season Summary

All king crab fisheries remained closed during 1995-96 due to low abundance.

1996-97 Management Outlook

Fishery performance data from the 1994-95 season demonstrated that the brown king crab stocks in PWS remained at a very low level. The data provided no indication of significant impending recruitment to the legal segment of the stock. Interviews with participants in the 1994-95 brown king crab fishery indicated that the brown king crab stock in PWS will remain depressed for several years. Reports indicated that the catch of sublegal and female crabs was very low. The department does not plan to open the brown king crab fishery for the 1996-97 season.

The 1991-92 fishery for red and blue king crab likewise provided no indication of impending recruitment and little potential for near term change in the stock. The very low number of red king crabs captured in the 1992 and 1993 trawl surveys indicates no change in the depressed status of this stock. The 1995 trawl survey did not capture any king crab. The department plans to close the red king crab fishery during the 1996 - 97 season.

The blue king crab fishery is scheduled to remain closed for the 1996-97 season based on the 1991-92 season fishery performance. Increased recruitment due to immigration is highly unlikely because of a low probability that this isolated stock is related to other blue king crab populations in Alaska. During the last regulatory season in 1991-92, fishermen reported very few undersized male and female blue king crabs, therefore, a recovery of the stock is not expected in the near term.

DUNGENESS CRAB FISHERY

Introduction

The Prince William Sound Management Area is divided into 3 Dungeness crab fishing districts. The 3 districts are Orca Inlet, Copper River, and Northern district (Figure 3). Historically, the major Dungeness crab harvests have come from the Orca Inlet and Copper River Districts. Dungeness crabs were also harvested from the Orca Bay portion of the Northern District and in western Prince William Sound. These harvests, however, have been proportionately small (Appendix C).

Northern District

The Northern District season is open year-round. The harvest has been taken either incidental to the Tanner crab fishery or by one or two vessels targeting Dungeness crab. The district has limited Dungeness crab habitat and a history of low production, for example, the recent 10 year average harvest (1984-1993) was 684 lb with effort never exceeding 2 vessels. These figures include 7 years when no harvest occurred. The eastern portion of Orca Bay, which adjoins Orca Inlet, provides Dungeness crab to both the Orca Inlet and Northern Districts. Movement generally occurs from Orca Bay into Orca Inlet during the summer with a return to the deeper waters of Orca Bay in the winter.

Orca Inlet District

Orca Inlet, which is immediately adjacent to the community of Cordova, once provided a fishery that allowed participation by small vessels in an area protected from adverse sea conditions. The largest vessels fishing this area were in the 40 foot seiner class. Most vessels made 1 day trips and delivered each fishing day. Harvests have ranged from over 1.0 million lb in the early 1960's

to 35,000 lb in 1976. The limited data available on effort in this district indicate that for the period 1976 to 1979 the number of vessels ranged from 3 to 34 and averaged 23. This district has a 100 pot limit. The Orca Inlet district has been closed via regulation from 1980 to 1995.

The department conducted an annual survey in the Orca Inlet district from 1977 to 1994. In 1995, due to low abundance, the survey was changed to a biennial event. The District opens on or after September 1 by emergency order only and closes on May 31. The September opening occurs only if the department survey indicates both an adequate abundance of Dungeness crabs and completion of the annual molt.

The major reason for the continued suppression of the Dungeness crab population in Orca Inlet is predation by the sea otter. The otters arrived in large numbers during 1980 and immediately impacted the Dungeness crab stock. A sea otter predator/prey relationship study conducted in the late 1970's showed that when Dungeness crabs are available, an otter is capable of eating 10 crabs per day.

Copper River District

The Copper River District fishery occurs along the eastern portion of the Copper River delta and in the Controller Bay area. The recent 10 year (1985-1994) average annual catch and effort were approximately 470,000 lb and 10 vessels. These figures include 2.5 years when the season was closed due to low abundance. The Copper River District is exposed to the Gulf of Alaska and the longer running distance to market generally requires larger vessels. Beginning in 1987, split regulatory seasons were implemented in the Copper River District with open season dates of March 20 to May 20 and July 25 to December 31. The regulatory closure extends from May 20 to July 25 and is designed to protect the stock from handling mortality during the soft shell period following the annual adult male molt. Additionally, the Controller Bay area closes on October 15. The early fall closure is designed to reduce gear loss and consequent mortality from storms in this area of shallow water.

The department conducts an annual Dungeness softshell survey prior to the July 25 opening date. If 10 percent or greater of the crabs are in a softshell condition the fishery is delayed and another survey is conducted in mid-August. The July 25 opening was delayed via emergency order in 1987, 1988, 1990, and 1991. The corresponding opening dates for the aforementioned years were: August 20, September 15, August 19, and August 28.

The fishery has remained closed since the spring of 1992 due to low abundance. The 1992 spring season harvest was very low totalling 2,458 lb by 2 vessels. Catch per unit of effort (CPUE) of legal crab averaged 1.0 for both of the department's 1992 summer soft shell surveys (1.2 in July and 1.1 in August) indicating that the stock was depressed. This condition coupled with relatively poor recruitment resulted in the closure of the 1992 fall season fishery by emergency order.

Statewide Dungeness regulations provide for a male only harvest with a minimum legal size of 6.5 inches. Gear requirements include a biodegradable escape mechanism and two 4 $\frac{3}{8}$ inch escape rings. Regulations which are specific to the PWS management area include superexclusive registration, a 250 pot limit for the Northern and Copper River Districts, and a 100 pot limit for the Orca Inlet District.

1995 Season Summary

Northern District

No effort occurred in the Northern District in 1995. The district was open for the entire year.

Orca Inlet District

There was no open season in the Orca Inlet District in 1995. The 1994 survey yielded a total of 8.0 Dungeness crabs in 30 pot lifts.

Copper River District

The Copper River District season remained closed during 1995. The department's August survey CPUE of legal males remained approximately equal from 1994 (1.4) to 1995 (1.5) (Table 2). These figures are comparable to the department's 1992 survey (1.1), a year when only 2,458 lb were commercially harvested during the spring season.

1996 Management Outlook

Northern District

The Northern district will remain open year-round.

Orca Inlet District

Orca Inlet will continue to be surveyed on a biennial basis; however, a near term recovery is not anticipated as the sea otter population does not appear to be declining. Due to extremely small survey catches there is a low likelihood of the stock increasing to a fishable level. The next Orca Inlet survey will occur in 1996.

Copper River District

The department plans to continue monitoring the summer molt in the Copper River District via the annual survey prior to the July 25 regulatory opening date. If the molting period is prolonged or has not occurred, an emergency order will be issued to delay the fishery opening and the

department will conduct an additional survey in mid-August. The August survey CPUE of prerecruit crabs also exhibited little change between 1994 and 1995 with true prerecruits averaging 3.1 and 3.0 and oldshell prerecruits averaging 9.2 and 9.9 in each year. The high incidence of skip molting in the prerecruit classes indicates continued poor recruitment in 1996. The 1996 fishery will remain closed if weak recruitment persists.

POT SHRIMP FISHERY

Introduction

The Prince William Sound Management Area is divided into two shrimp pot fishing areas (Figure 5). They are the Eastern Area and the Traditional Harvest Area (THA). The shrimp pot fishery targets on spot shrimp and to a limited extent coonstripe shrimp *Pandalus hypsinotus*.

Eastern Area

The Eastern Area includes all waters east of a line from Montague Point to Bidarka Point. This area has a very low production history. Harvests have averaged less than 1,000 lb. The last commercial harvest of spot shrimp from the Eastern area occurred in 1991 when 325 lb were harvested. Reports from subsistence and sport fishermen indicate that shrimp catches are very low. The area is open year around. A commissioner's permit is required to fish in this area to allow the monitoring of effort and catch via mandatory logbooks and department contact.

Traditional Harvest Area

The Traditional Harvest Area is characterized by numerous steeply cut glacial fjords and passages. This area encompasses the northern shore of PWS from Port Valdez to Whittier and

all of western and southwestern PWS including Montague Strait. Historically, a majority of the shrimp catch has come from the THA. Market access is through the ports of Whittier, Valdez, and Seward, which have direct transportation ties with the Anchorage metropolitan area. This accessibility has been the key to development of fresh markets for unprocessed spot shrimp, because the product can be utilized shortly after capture. The Prince William Sound shrimp pot fishery was unique in that participants varied from full-time to seasonal and weekend fishermen. This heterogeneous mix has split the industry as to the desired season of harvest.

Commercial shrimp landings were first documented in 1960 when 4,100 lb were harvested. Early seasons lasted the entire year. From 1960 through 1977, catch varied from no reported harvest in 1962 and 1966 to a high of 20,000 lb in 1974 (Appendix D). The shrimp pot fishery expanded rapidly after 1978 with increases in both catch and effort. Growth of the fishery was greatest from 1978 through 1982. During this period local markets were established and the major harvest areas located. Landings increased from 12,000 lb in 1978 to 178,000 lb in 1982. Similarly, effort increased from 9 to 57 vessels during this period.

During the period 1982-1984 the open season was reduced to April 1 through November 30 with a guideline harvest range of 75,000 to 145,000 lb. Despite the shortened fishing season catch and effort increased to 214,000 lb and 79 vessels.

In 1984 the BOF adopted a spot shrimp management plan which recognized the need for a conservative management policy for the THA. Among other things the plan called for seasons avoiding peak egg bearing periods and guideline harvest ranges. This resulted in two open seasons per year (March 15-June 30 and August 15-December 15) and a GHR of 75,000 to 100,000 lb per season.

In subsequent seasons, catch and effort reached historical highs of 290,653 lb in 1986 and 86 vessels in 1987. During the years 1985-1987 the harvest peaked at 290,653 lb and vessels at 86 in 1987. By 1989 catch and effort had declined to a low of 29,315 lb from 33 vessels. A limited spot shrimp fishery was held in 1991 with a conservative guideline harvest range of 10,000 to

40,000 lb. The 1991 fishery closed after 46 days of fishing and the harvest totalled 17,255 lb taken by 14 vessels making 44 landings. Fishery performance data from the 1991 fishery indicated that the stock was at a very low level. The commercial spot shrimp season remained closed in the THA through 1994 due to low abundance.

In 1989 the department began a survey of spot shrimp in the THA to assess the spot shrimp stocks. Six stations in the northern, western, and southwestern portions of PWS have been surveyed annually since 1989. Two experimental stations in southwestern PWS were added in 1991. Data from the survey, specifically CPUE and sex ratios, were used in making management decisions regarding the 1991 fishery and in subsequent years when no fishery occurred.

Statewide shrimp regulations specify buoy marking, maximum tunnel size, and a biodegradable escape mechanism. During the spring 1994 meeting the BOF adopted a new GHR for PWS shrimp, reducing it from 150,000-200,000 lb to 0-100,000 lb. In summary, additional regulations specific to shrimp fishing with pot gear in the PWS Management Area include the following:

1. Two regulatory fishing seasons occur per calendar year in the Traditional Harvest Area. The spring season opens on May 1 and closes on June 30 and the fall season begins on August 15 and continues until December 15.
2. The annual GHR harvest range is 0 - 100,000 lb. The guideline is split evenly between the two seasons. Either season may be closed earlier by emergency order if the harvest level is achieved. When excessive harvest occurs during the spring season, the poundage is deducted from the fall season.
3. A limit of 150 pots per vessel.
4. Pots with a definable side must have at least two adjacent sides completely composed of rigid mesh that allows the unaided passage of a 7/8" dowel. Round pots must have the rigid mesh covering a minimum of 50% of the vertical surface area of the pot.

1995 Season Summary

The Eastern area remained open to harvest through 1995, however, there was no effort.

Commercial fishing in the THA was closed in 1995 due to continued low abundance. The October spot shrimp survey showed a decline in CPUE of spot shrimp from 0.8 lb in 1992 to 0.3 lb in 1994 (Table 3). Survey CPUE of spot shrimp at experimental stations in southwestern PWS rose to 0.5 lb in 1994, a figure that is comparable to the 1992 level of 0.6 lb (Table 4).

1996 Management Outlook

Eastern Prince William Sound

The department plans to allow year-round fishing in this area during 1996 and use the commissioner's permit as the primary management tool. Since production was historically low and zero in recent years, it appears that no significant quantities of spot shrimp exist in this district. All shrimp harvests in the district have occurred inside PWS. The Gulf of Alaska portion of the area does not provide the habitat required for spot shrimp.

Traditional Harvest Area

The 1995 annual spot shrimp survey within the THA indicated that although the overall stock remained depressed, it had increased slightly over 1994 levels. Catch per pot at the traditional stations of the 1994 survey was comparable to the 1993 survey and averaged 0.3 lb of whole shrimp per pot. In 1995, catch per pot increased to an average of 0.5 lb in 262 pots. Overall catch in the traditional survey stations totalled 3,280 males (96%) and 138 females (4%). Among females, 127, or approximately 0.5 per pot, were ovigerous. The survey catch of females has declined significantly from 1993 when 421 females were captured. The low numbers captured

in the 1994 and 1995 surveys indicated that the female segment of the stock was at a very low level. Based upon the 1995 survey catch data, the department intends to close the fishery through 1996.

It is apparent that a conservative management approach is warranted for the following reasons:

1. The number of female and large male shrimp remains low. If a fishery is permitted, these shrimp will be targeted as salable and the abundance of this size range will decline further thereby reducing the brood stock and increasing the risk of future recruitment failure.
2. Spot shrimp are long lived and slow growing further emphasizing the need to keep fishing mortalities low.

The October 1996 spot shrimp survey will occur after the period of summer growth. This survey will provide the basis for a management decision regarding the 1997 fishery.

TRAWL SHRIMP FISHERY

Introduction

The PWS Management Area is divided into two shrimp trawl fishing areas, the Northwest Shrimp Trawl Fishing District (NSTFD) and the central/southwest areas of PWS (Figure 5). Emphasis in the shrimp trawl fishery has shifted from the harvest of pink shrimp *Pandalus borealis* in southwestern PWS to sidestripe shrimp in northwestern PWS. Large Kodiak based vessels harvested pink shrimp in southwestern PWS and constituted the main effort during the early 1980's. The fishery for pink shrimp declined due to the low ex-vessel value, limited processing capabilities, and declining stocks. After the trawl fishery for pink shrimp was fully developed, catches ranged from 171,000 lb to 1.3 million lb and effort ranged from 3 to 14 vessels (Appendix E).

The first documented harvest of sidestripe shrimp occurred in 1983 around the Icy Bay area, however, subsequent activity focused on Port Wells and Wells Passage in northwestern PWS. Increased harvests of sidestripe shrimp began in 1985. The reason for the sudden expansion was the development of markets and gear by fishermen with small, efficient vessels, targeting on stocks which were previously unfished.

The sidestripe shrimp fishery has operated chiefly out of the ports of Whittier and Valdez. Sidestripe tails were sold fresh in PWS communities and Anchorage while markets for whole, fresh, and frozen sidestripes existed in both Anchorage and Japan. Harvests in the early years (1987-1991) came almost exclusively from the Port Wells and Wells Passage areas. From 1987 to 1993, catch and effort increased from 96,000 lb from 2 vessels to 246,000 lb from 7 vessels. The increased harvests in these years reflects increases in both effort and areas fished. During the years 1992 and 1993, effort in the central and southwest areas increased sharply and included two larger catcher-processors.

Concern for the conservation of the sidestripe shrimp resource in Port Wells heightened as catch and effort increased. In April 1990 the department initiated a program utilizing onboard observer data to calculate an area-swept estimate of shrimp abundance in the Port Wells area. A 20% harvest rate was applied to the estimate. Although this management strategy seemed conservative, harvest levels declined from 80,000 lb in 1991 to 35,000 lb in 1994. For the period 1991 through 1994, fishery closures were effected by emergency order in the Port Wells area on June 23, June 3, May 20, and May 24 due to attainment of the respective harvest levels.

The trawl fishery in the central and southwest areas of PWS have been managed based upon historical catches and CPUE. Both catch and CPUE have declined in these areas resulting in reduced harvest levels. In response to industry claims that reduced CPUE reflected a shift in shrimp distribution rather than declining abundance, the department reopened the shrimp fishery in the central and southwest portions of PWS in October of 1994 with a conservative GHL of 10,000 lb. Catch and CPUE remained low indicating that no seasonal shift in distribution occurs.

The GHL was not raised and the fishery closed on October 20, 1994. Actual catch data are confidential due to the low number of participants.

Since the development of the sidestripe shrimp fishery, a variety of regulatory measures have been developed by both industry and the department and adopted by the BOF. These regulatory measures were most recently restructured in 1994.

At the spring 1994 shellfish meeting the BOF created the Northwest Shrimp Trawl Fishing District (NSTFD) and set open season dates of April 15 to August 15, and October 1 to December 31 for the entire management area. The spring open season date change was based upon data which indicated that egg release was not complete until April 15. The fall open season date was changed based upon the recommendation of fishermen stating that soft shell shrimp were present until October 1. Additionally, the BOF changed the cod end requirement and stipulated that the entire cod end will consist of square hung $1\frac{7}{8}$ in mesh. Other changes made in the regulatory framework of the shrimp trawl fishery included the deletion of the Icy Bay Shrimp District and its guideline harvest range (GHR).

In summary the current regulatory measures for trawl shrimp are:

- 1) April 15- August 15 and October 1-December 31 season dates.
- 2) Cod end mesh requirement. Cod ends must be completely composed of $1\frac{7}{8}$ inch stretched mesh hung horizontal and perpendicular to the mouth of the trawl.
- 3) A year-round closure in eastern Prince William Sound (Port Fidalgo, Orca Bay, Hinchinbrook Entrance, and north Montague) to minimize indirect fishing mortality on depressed stocks of king and Tanner crabs in these key production areas.

1995 Season Summary

The PWS sidestripe shrimp fishery opened by regulation on April 15, 1995 with preseason ghl's set (by area) equal to the 1994 spring season harvest levels. The harvest level in the NSTFD was subsequently adjusted based upon inseason biomass estimates with a 20% harvest rate applied. The biomass estimates were generated using area-swept data collected from a commercial vessel.

The department continued to collect onboard observer data in 1995 during the commercial fishery in Port Wells. The inseason ghl was set at 35,000 lb based upon these data. The quota was comparable to the 1994 level of 34,000 lb and marked the first time in the last four years that the Port Wells quota had not declined. The Port Wells and Wells Passage portion of the NSTFD closed by emergency order on May 29, 1995 due to the projected attainment of the guideline. The harvest from the Port Wells area totalled 32,553 lb from 19 landings by 3 vessels.

After the closure of the Port Wells area, the trawl fishery for sidestripe shrimp shifted into the remainder of the PWS management area, primarily the Perry Passage portion of the NSTFD and the central and southwest areas of PWS. The department used an onboard observer to collect data in the Perry Passage area. Using methods identical to those applied in Port Wells, the department established a biomass estimate which resulted in a quota of 16,000 lb. Based upon fishery performance and projected catch the NSTFD closed on June 18. Harvest from the entire NSTFD was 45,925 lb from 25 landings by 3 vessels.

The central and southwest portions of PWS had a preseason guideline harvest level of 34,000 lb. The ghl was based upon the 1994 harvest from these areas. Historically effort primarily focused in the central portion of PWS, however, during 1995 fishing effort was split between the central and southwest portions of PWS. Although the guideline was attained prior to the August 15 regulatory closure date, the department allowed the fishery to continue to the regulatory closure date because of the opportunity to gather additional data from the new harvest areas. The central

and southwest portions of PWS closed by regulation on August 15. Harvest from these areas totalled 51,967 lb from 15 landings by 3 vessels. Due to attainment of the guideline, the inside waters of PWS were closed to shrimp trawling by emergency order for the balance of 1995.

An additional emergency order opened the GOA waters of the PWS Management Area from August 30 to December 31. This was done to provide an opportunity for exploratory fishing in the outside waters of the area prior to the onset of more severe winter weather. A single vessel fished this area, however, no catch was reported.

Total harvest in the 1995 fishery was 97,895 lb, which included 24,189 lb of deadloss, from 39 landings by 4 vessels. Deadloss was composed of unmarketable or small sidestripe and pink shrimp. Deadloss typically accounts for 5% to 45% of the shrimp catch depending upon the vessel and its markets. The reporting of deadloss remains incomplete with some vessels likely reporting only a small proportion of the actual amount.

In 1995 fishermen were required to report catches on the date of landing. This requirement was established to improve on the timeliness of catch reporting which has historically been a problem in this fishery.

Three of the 4 vessels participating in the fishery operated otter trawls; the other was a beam trawl. Vessel length ranged from 36' to 46'. The average ex-vessel value for trawl caught shrimp was \$2.74 per lb whole shrimp weight resulting in a fishery value of approximately \$202,000.

1996 Management Outlook

The department will continue to manage the sidestripe trawl fishery in the Port Wells area via a 20% harvest rate applied to an area-swept population estimate generated from commercial trawl vessel data. Fishery performance data has indicated that the sidestripe stock in the Port Wells portion of the NSTFD has declined from earlier years. Catch per hour towed declined by approximately 50% from 1991 to 1992. Since 1992 catch rates have continued to decline annually. This trend has forced the department to set increasingly conservative harvest quotas. As a result there is a strong likelihood of a reduced harvest level in 1996. Effort in the fishery is expected to remain stable due to the decrease in stock size and reduced harvest levels. Any increase in effort, however, will likely result in the early attainment of the harvest level thereby prompting a closure prior to the regulatory date.

The central and southwest areas of PWS have received sporadic effort since 1993. Catch rates in these areas of PWS indicate that the stock is small. The central portion of PWS saw an additional decline in catch and catch rates in 1995. This area, which accounted for approximately 60% of the 1993 harvest, contributed significantly less to the 1994 and 1995 harvests. For example, during the 1993 season this area produced approximately 150,000 lb. The 1996 preseason guideline harvest level for this area will be set equal to the 1995 guideline harvest level. The department plans to continue monitoring logbook data for significant changes in CPUE. A harvest level may eventually be established by applying the area swept assessment methodology used in the Port Wells area.

There is a lack of sidestripe harvest data from this area, therefore, the department will take a very conservative approach in setting quotas for this area. The initial season harvest goal for 1996 will be set equal to the 1995 harvest, however, the department plans to assess the sidestripe stock in this area using onboard observer and logbook data.

Due to very limited processing capability and suspected limited abundance, no fishery targeting pink shrimp is expected in southwestern PWS in 1996.

RAZOR CLAM FISHERY

Introduction

Beginning in 1916 and continuing into the mid 1950's, Cordova was known as the "razor clam capital of the world". Although historical fishery statistics are imprecise, it appears that the majority of razor clams were harvested from Orca Inlet and the western Copper River Delta (Figure 6). The eastern Copper River Delta, which includes Kanak Island, was not a substantial contributor to the early harvests. Catches during this time ranged from 3.6 million lb in 1917 to a frequent harvest of over 1.0 million lb. Most of the product was canned and used for human consumption.

Beginning in the 1950's and continuing into the early 1980's, commercial demand for razor clams shifted to Dungeness crab bait. Coincident with the market shift, the PWS razor clam industry experienced a period of decline. The decline was attributable to a variety of factors including a market shift from the West coast to the East coast clam fishery and substrate change caused by alteration in the Copper River outflow which severely affected juvenile survival. Subsequent to this the "Good Friday Earthquake" in 1964 caused significant uplift in prime razor clam habitat in Orca Inlet. This loss of habitat resulted in record low harvests in the 70's and early 80's (Appendix F) and caused a shift in clam digging effort to the east side of the Copper River delta and Controller Bay area.

The demand for razor clams for human consumption increased again in 1983 when a decline in clam abundance in Washington state led to an expanded fishery in Prince William Sound. Since 1983 the majority of the clam harvest has been taken at Kanak Island beach with minor amounts

coming from Softuk and Katalla beaches on the eastern Delta. Yearly harvests during the 1980's attained a maximum of 170,000 lb in 1984 with a recent ten year (1981 - 1990) average annual harvest of 45,000 lb and an average of 16 diggers.

The department currently monitors commercial razor clam harvests via fish ticket information. The non-commercial harvest from the Copper River Delta is monitored through a permit system which requires a harvest report.

A guideline harvest range of 100,000 to 150,000 lb is in effect for the combined commercial and sport/subsistence harvests from Kanak Island. By regulation, clams harvested from Kanak Island must be used for human consumption as food. There is a 4 1/2 in (114 mm) minimum legal size for all commercially harvested razor clams. On the Copper River Delta, noncommercially harvested razor clams also have a minimum legal size of 4 1/2 in (114 mm). There is no minimum size for clams harvested on a noncommercial basis elsewhere in the management area. Additionally, razor clams harvested from the Copper River Delta by noncommercial digger Razor clams Kanak beach receives annual certification by the Alaska Department of Environmental Conservation (ADEC). Certification allows bivalves to be sold for human consumption.

Although Kanak Island is designated for human consumption, the department has difficulty enforcing this regulation. Sand bars near Kanak, that are exposed at low or minus tides, have been the source of bait clams. For enforcement purposes, the department has defined Kanak Island as all tidelands that have a physical land connection with Kanak Island during any tide stage.

1995 Season Summary

There was no commercial harvest of razor clams from the PWS management area in 1995. The reported non-commercial harvest (subsistence, sport, and personal use) during 1995 was 92 lb. The department issued 42 non-commercial permits for the Copper River Delta of which 14 dug clams, 27 did not dig, and 1 did not report. Harvest was greatest from Softuk beach with 57 lb reported. Kanak beach accounted for the balance of the harvest with 35 lb reported.

1996 Management Outlook

Although the department does not conduct population estimates, reports from non-commercial diggers indicate that razor clam abundance has declined over the previous 5 years in the eastern delta, Katalla, and Controller Bay areas. This information is supported by the lack of interest from commercial diggers and the low number of permits issued in recent years. Additionally, ex-vessel value of razor clams has not substantially increased for several years. Bait and food clams command a similar price, approximately \$1.00 per pound. The local bait clam market has been poor since 1991 due to the depressed Dungeness stocks on the Copper River Delta. Unless an increased demand for food clams occurs and clam abundance increases over current levels, the harvest will remain well below the guideline harvest range of 100,000 to 150,000 lb set for the beach at Kanak Island. If effort increases at Kanak Island, the department will monitor the stock via catch per unit of effort data.

WEATHERVANE SCALLOP FISHERY

Introduction

A fishery for weathervane scallops developed in the PWS management area in 1992. Although landings have occurred from the Yakutat area to the east since the late 1960's, the 1992 harvest constitutes the first documented commercial scallop landings from Area E.

The 1992 harvest of weathervane scallops in the PWS management area totalled 208,836 lb of meats taken by 4 boats. This poundage equates to approximately 2.1 million lb whole scallop weight. The commissioner's permit was a management tool used to require fishermen to submit logbooks and weekly catch reports. Logbooks were largely incomplete. Harvest occurred from two statistical areas (202-09 and 202-10) in the Kayak Island vicinity (Figure 7). Waters of PWS and the nearshore Gulf remained closed to scallop dredging due to department bycatch concerns for depressed Tanner and Dungeness crab stocks. Fishing began in late February 1992 and closed by emergency order on April 23. The closure was based upon an allowable harvest of 64,000 lb meat weight which was established by developing an area-swept scallop biomass estimate using fishery performance data and applying a 10% harvest rate. This harvest rate was identical to that specified by the Board of Fisheries for the Cook Inlet scallop fishery.

The discrepancy between allowable (64,000 lbs) and actual harvest (208,836 lbs) was directly attributable to a lack of timely and accurate catch reporting. As the fishery progressed, both effort and the geographic area fished increased. Information gathering was difficult because the majority of landings occurred at a port with no department staffing. Collection of data in season was accomplished by weekly radio reports of estimated catch, however, actual catch by each vessel was not ascertained until the time of landing. Errors from radio reports of estimated catch were not evident in some cases for up to 2 weeks. The time delay was attributable to fishing trip length and the time necessary for a fish ticket to arrive via mail. By the time that a picture of scallop stock distribution and density had emerged, the harvest had progressed to an estimated

150,000 lb. When the fishery closed 3 days later the harvest was approximately 209,000 lb meat weight.

After the eastern Gulf portion of the management area closed, participants expressed an interest in exploratory fishing in the western Gulf portion of the area. Effort in the western Gulf portion of the management area was low with only 2 participants and no reported harvest.

During 1992, in response to the increases in scallop harvests statewide, the department began development of an interim fisheries management plan under 5 AAC 39.210. Management Plan for High Impact and Emerging Fisheries. This interim management plan was formulated and implemented in July 1993, prior to the opening in PWS.

Key features of the PWS portion of the plan included:

1. Area registration.
2. Gear requirements including 4" ring size and maximum of two 15' dredges.
3. Guideline harvest level of 50,000 lb meat weight.
4. Bycatch caps of 500 and 130 Tanner crabs east and west of 147°00' W. longitude, respectively.
5. Season dates set by emergency order.
6. Industry funded observer program.
7. Crew size limit of 12.

Two scallop fishing areas were established for the PWS Management Area (Figure 8):

1. Eastern Area - waters east of 147°00' W. longitude and south of 60°00' N. latitude.
2. Western Area - waters west of 147°00' W. longitude and south of 59°45' N. latitude.

The Eastern area comprised the location of the primary harvest and had a quota of 50,000 lb meat weight. The Western area opened to provide an opportunity for exploratory fishing with an initial quota of 5,000 lb.

The 1993 scallop fishery in the PWS management area opened on July 15 at 12:00 noon. Prior to fishing each vessel was required to register and each observer was briefed. Radio contacts were made twice daily with each observer reporting fishing area, number of tows, sampling intensity, crab bycatch, and scallop catch.

Seven vessels ranging in length from 81' to 145' participated in the fishery. The scallop harvest from the Eastern area totalled 63,068 lb meat weight. Catch per tow and tow length averaged 231 lb meat weight and 51 minutes. The fishery closed in the eastern area by emergency order on July 18, 1993 at 7:00 a.m. resulting in a fishery duration of 67 hours (2.8 days).

Four vessels made tows in the western Gulf area after the Eastern area closed. No catch was reported from this area.

The Statewide Scallop Management Plan was adopted with changes during the spring 1994 BOF meeting. The season opening date was set at January 10 with the closure set by emergency order. Additionally the 1994 Plan established closed waters in the eastern portion of PWS and waters along the Copper River Delta. These closures were intended to address concerns for depressed Tanner crab stocks within PWS and the depressed Dungeness crab stocks in the Copper River Delta area.

There was no commercial scallop season during 1994 due to the change of season dates from a July to a January opening. Any harvest in 1994 would have effectively doubled the removals from the stock during the same spawning cycle. Therefore, the department set the next opening for January 10, 1995.

1995 Season Summary

The weathervane scallop fishery opened at 12:00 noon on January 10, 1995 with a preseason guideline harvest level of 50,000 lb meat weight. Two vessels participated; therefore, the catch

data are confidential. Permit stipulations were identical to 1993, and included observer coverage. Although observer data are not fully analyzed, the relatively narrow range of sizes in the catch indicate that the fishery is supported by a single or possibly 2 year classes. Observers expressed difficulty in obtaining examples of younger age classes due to low abundance. Harvest again occurred over a small area and was confined to 2 statistical subareas. This was identical to the previous years' fisheries. The fishery closed by emergency order at 6:00 pm on January 26 due to attainment of the quota..

Waters west of 146°00' west longitude remained open to exploratory fishing, however, no fishing occurred.

Subsequent to the January 26 closure, a vessel fished the Kayak scallop bed but remained outside the 3 mile state waters limit. This was due to a loophole in the Magnusson Act which allowed for harvest in the EEZ provided that a vessel was not licensed or registered by the State of Alaska. The estimated harvest by this vessel was 60,000 lb meat weight. This amount effectively doubled the allowable harvest for 1995.

1996 Management Outlook

Due to the illegal harvest which occurred subsequent to the 1995 closure, there will be no scallop fishing near Kayak Island during 1996. The western portion of the management area will remain open for exploratory harvest in 1996. Experimental fishing in both 1992 and 1993 in the western Gulf of Alaska portion of the management area yielded no indication of a commercial scallop resource. Scallop fishing effort in the Prince William Sound management area will likely remain small. Given the current allowable harvest of 50,000 lb, any increase in effort will likely result in a fishery of very short duration.

MISCELLANEOUS SHELLFISH

Squid and Octopus

Squid are taken as bycatch during the commercial shrimp trawl fishery. The 1995 harvest totalled 1,767 lb by 2 vessels. Octopus harvested incidentally to the longline and pot groundfish fisheries will be reported in the groundfish annual management report.

Sea Cucumbers and Urchins

There have never been any reported landings of sea cucumbers or urchins from the PWS Management Area. The department conducts no surveys of either sea cucumbers or urchins. The most recent effort for sea cucumbers occurred in 1992 when 5 permits were issued, however, no catch was reported. This is consistent with anecdotal reports on abundance from both department and sport divers.

No permits have been issued for sea urchin harvest. Anecdotal information indicates few urchins of a marketable size in PWS.

Table 1. Shellfish Emergency Orders, Prince William Sound Management Area, 1995-96.

Fishery	Emergency order #	Effective date	Explanation
Tanner	2-S-E-01-96	01/15/96	Commercial - Closed the entire management area to Tanner crab fishing due to low stock abundance.
	2-S-E-03-96	01/01/96	Personal Use - Closed northern Montague Hinchinbrook entrance and Orca Bay due to low stock abundance.
	2-S-E-04-96	01/01/96	Subsistence - Closed northern Montague Hinchinbrook entrance and Orca Bay due to low stock abundance.
King	2-S-E-15-95	10/01/95	Commercial - Closed entire management area due to low abundance.
	2-S-E-09-95	04/17/95	Personal Use - Closed northern Montague, Hinchinbrook Entrance, and Orca Bay to personal use king crab fishing due to low stock abundance.
	2-S-E-08-95	04/17/95	Subsistence - Closed northern Montague, Hinchinbrook Entrance, and Orca Bay to subsistence king crab fishing due to low stock abundance.
Dungeness	2-S-E-05-95	01/26/95	Personal Use - Closed Orca Inlet to fishing due to low abundance.
	2-S-E-06-95	02/01/95	Subsistence - Closed Orca Inlet to fishing due to low abundance.
	2-S-E-12-95	07/25/95	Commercial - Closed Copper River District fishery until July 25, 1996 due to low abundance.
Pot Shrimp	2-S-E-07-95	05/01/95	Commercial - Closed the western side of Prince William Sound (formerly Traditional Harvest Area) to fishing for the 1995 season.
Trawl Shrimp	2-S-E-10-95	05/29/95	Commercial - Closed the Port Wells area due to attainment of guideline harvest level.
	2-S-E-11-95	06/18/95	Commercial - Closed entire Northwest Shrimp Trawl Fishing District due to attainment of guideline harvest level.
	2-S-E-13-95	10/01/95	Commercial - Closed inside waters of PWS management area to trawling for shrimp.
	2-S-E-14-95	08/30/95	Commercial - Opened Gulf of Alaska waters of the PWS management area to trawling for shrimp for the balance of 1995.
Scallops	2-S-E-02-95	01/26/95	Commercial - Closed eastern Gulf of Alaska portion of the PWS management area to scallop dredging.

**Table 2. Copper River District Dungeness crab survey average catch per pot
August 1985 - 1995.**

Year	Number of pots	Legal crabs	True recruits	Sublegal crabs	Newshell sublegal	Female crabs
1985	N/A					
1986	65	16.0	12.1 (76%)	10.8	3.8 (35%)	3.1
1987	80	9.9	4.3 (43%)	13.1	5.9 (45%)	10.5
1988	80	8.0	4.8 (60%)	11.8	4.1 (35%)	9.2
1989	N/A					
1990	80	8.3	3.0 (36%)	8.6	1.9 (22%)	8.0
1991	80	3.5	2.2 (63%)	12.6	3.2 (25%)	
1992	80	1.1	0.3 (27%)	10.0	3.4 (34%)	2.0
1993	37	3.5	1.6 (46%)	15.8	4.5 (28%)	3.7
1994	78	1.4	0.3 (21%)	9.2	3.1 (34%)	1.4
1995	80	1.5	0.3 (20%)	9.9	3.0 (30%)	0.7

Table 3. Traditional station catch statistics from the PWS spot shrimp surveys, 1989 - 1995.

Year	1989	1990	1991	1992	1993	1994	1995
Number of pots	132	197	194	261	250	264	262
Number of pounds	170	176.8	259.8	202.1	104.7	89	131.4
Mean weight per pot (lb)	1.3	0.9	1.3	0.8	0.4	0.3	0.5
Number of shrimp	5,192	4,283	5,964	3,962	2,075	2,541	3,418
Mean # shrimp per pot	39	22	31	15	8	10	13
Number of males	4,958 (96%)	3,910 (91%)	5,535 (93%)	3,480 (88%)	1,654 (80%)	2,418 (95%)	3,280 (96%)
Number of females	234 (4%)	373 (9%)	429 (7%)	482 (12%)	421 (20%)	123 (5%)	138 (4%)
Number of ovigerous females	213	343	324	463	413	118	127
Mean size males (mm)	27.7	29.3	30.5	31.7	28.1	27.5	28.7
Mean size females (mm)	41.3	41.9	41.3	41.9	42.5	43.5	43.1

Table 4. Experimental station catch statistics from the PWS spot shrimp surveys, 1991 - 1995.

Year	1991	1992	1993	1994	1995
Number of pots	11	110	86	87	88
Number of pounds	0.8	70.4	19	43.5	74.8
Mean weight per pot (lb)	<0.1	0.6	0.2	0.5	0.8
Number of shrimp	25	1,233	432	1,274	1,635
Mean # shrimp per pot	2	11	5	15	19
Number of males	24 (96%)	1,085 (88%)	371 (86%)	1,233 (97%)	1,554 (95%)
Number of females	1 (4%)	148 (12%)	61 (14%)	41 (3%)	81 (5%)
Number of ovigerous females	1	147	58	41	69
Mean size males (mm)	31.4	33.0	27.5	27.6	30.3
Mean size females (mm)	40.4	43.0	43.3	43.8	43.9

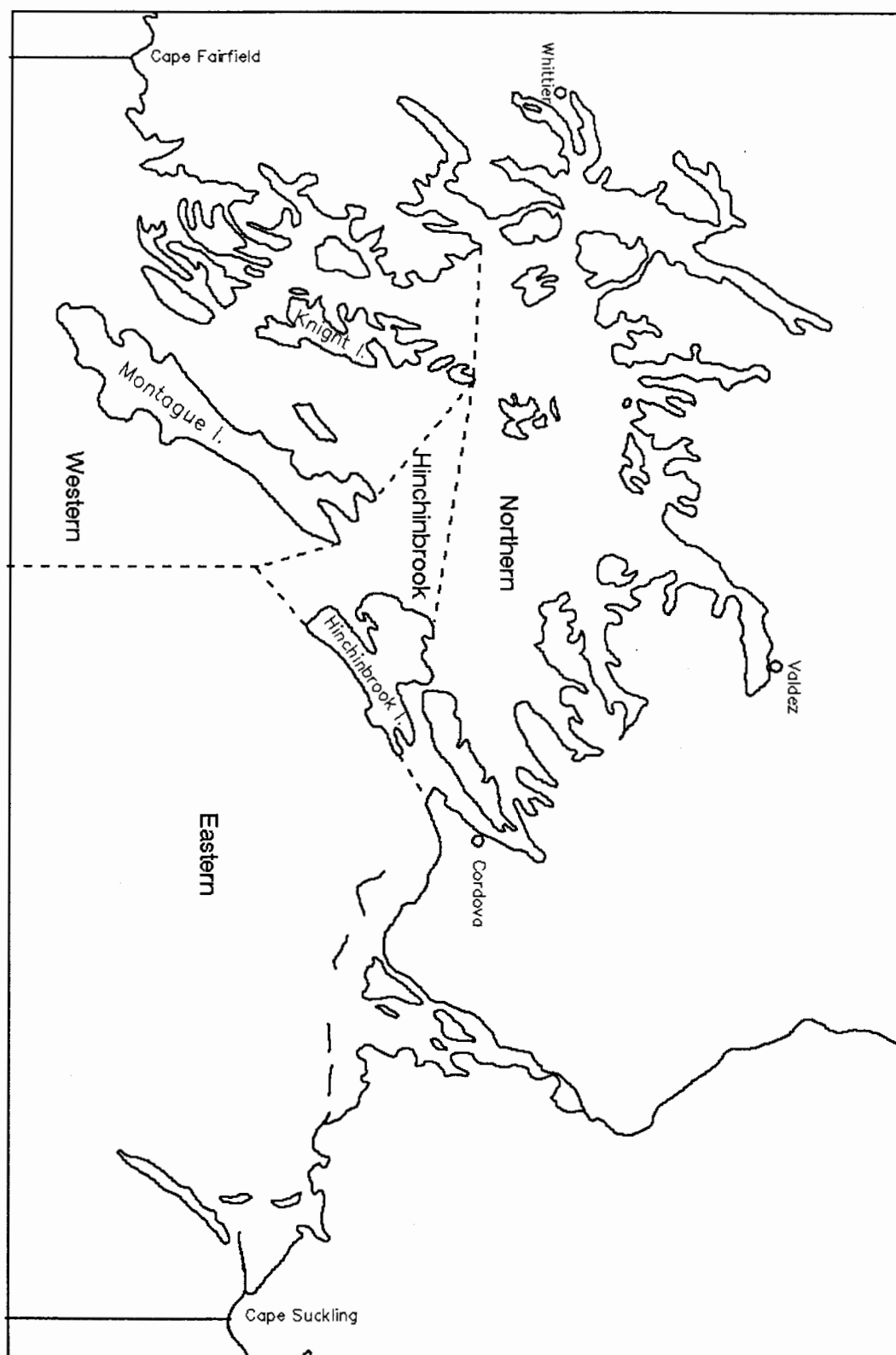


Figure 1. Prince William Sound Tanner crab fishing districts.

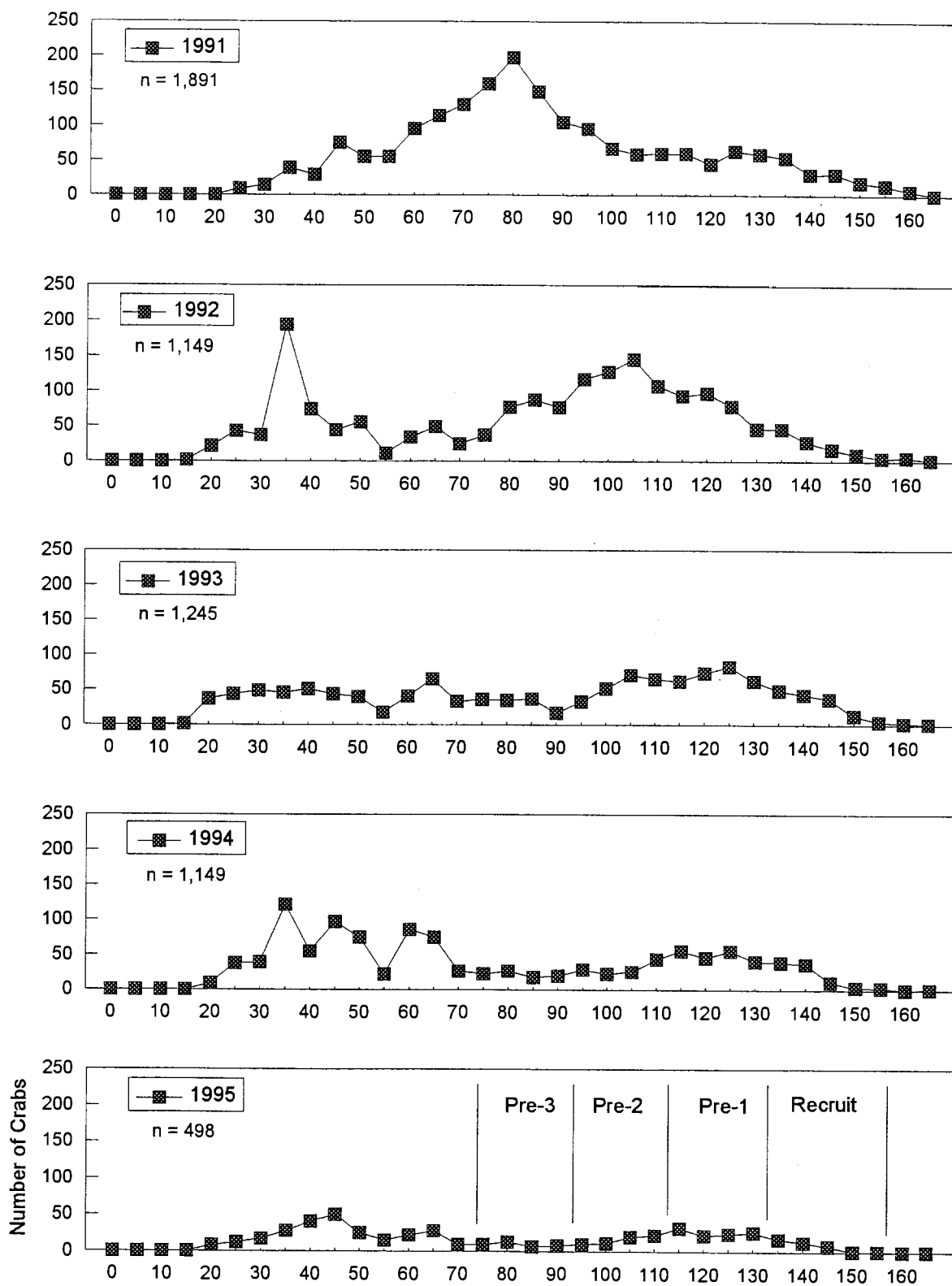


Figure 2. Male Tanner crab length frequency from the Prince William Sound trawl survey, 1991 - 1995.

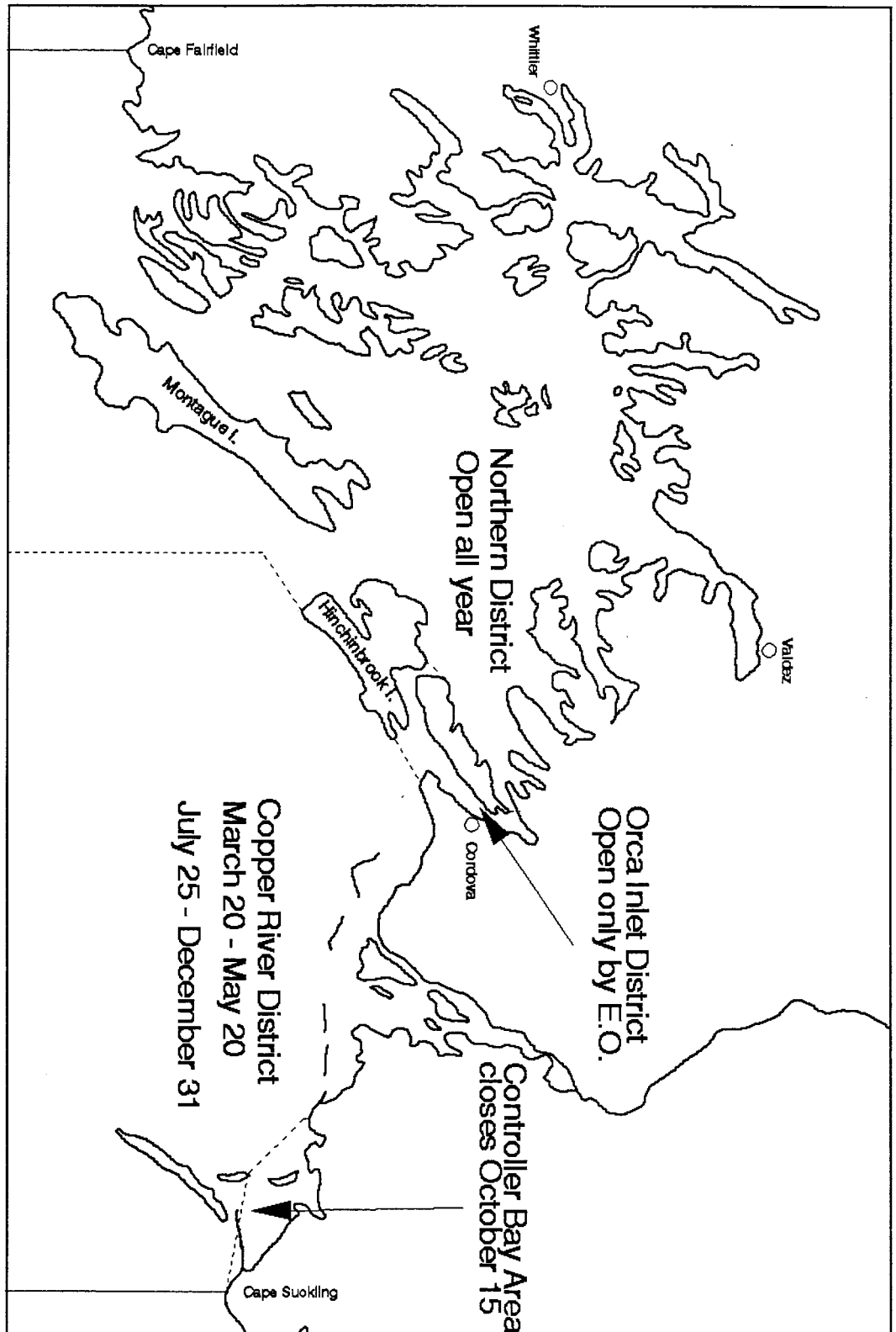


Figure 3. Prince William Sound Dungeness fishing seasons and districts.

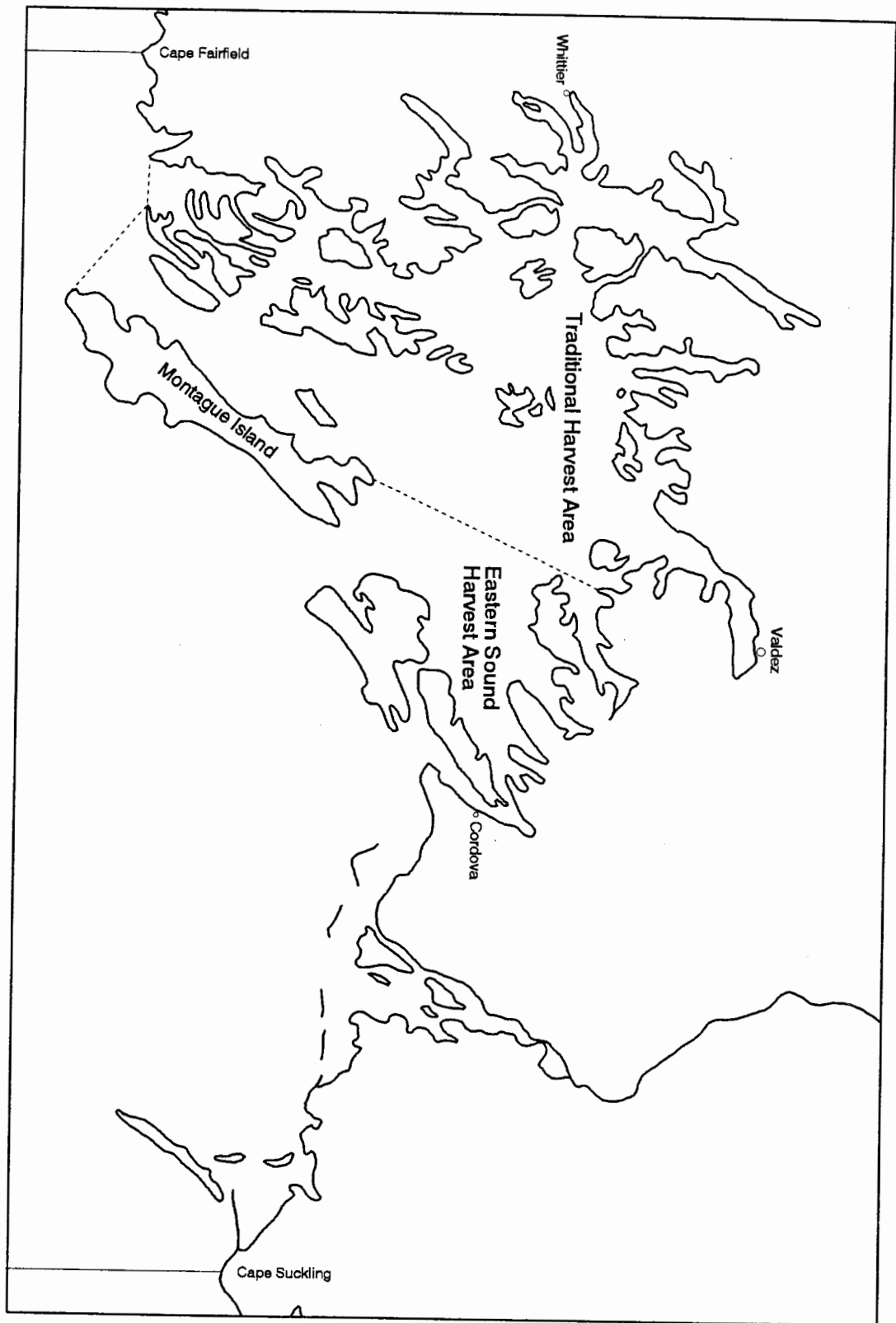


Figure 4. Prince William Sound pot shrimp management areas.

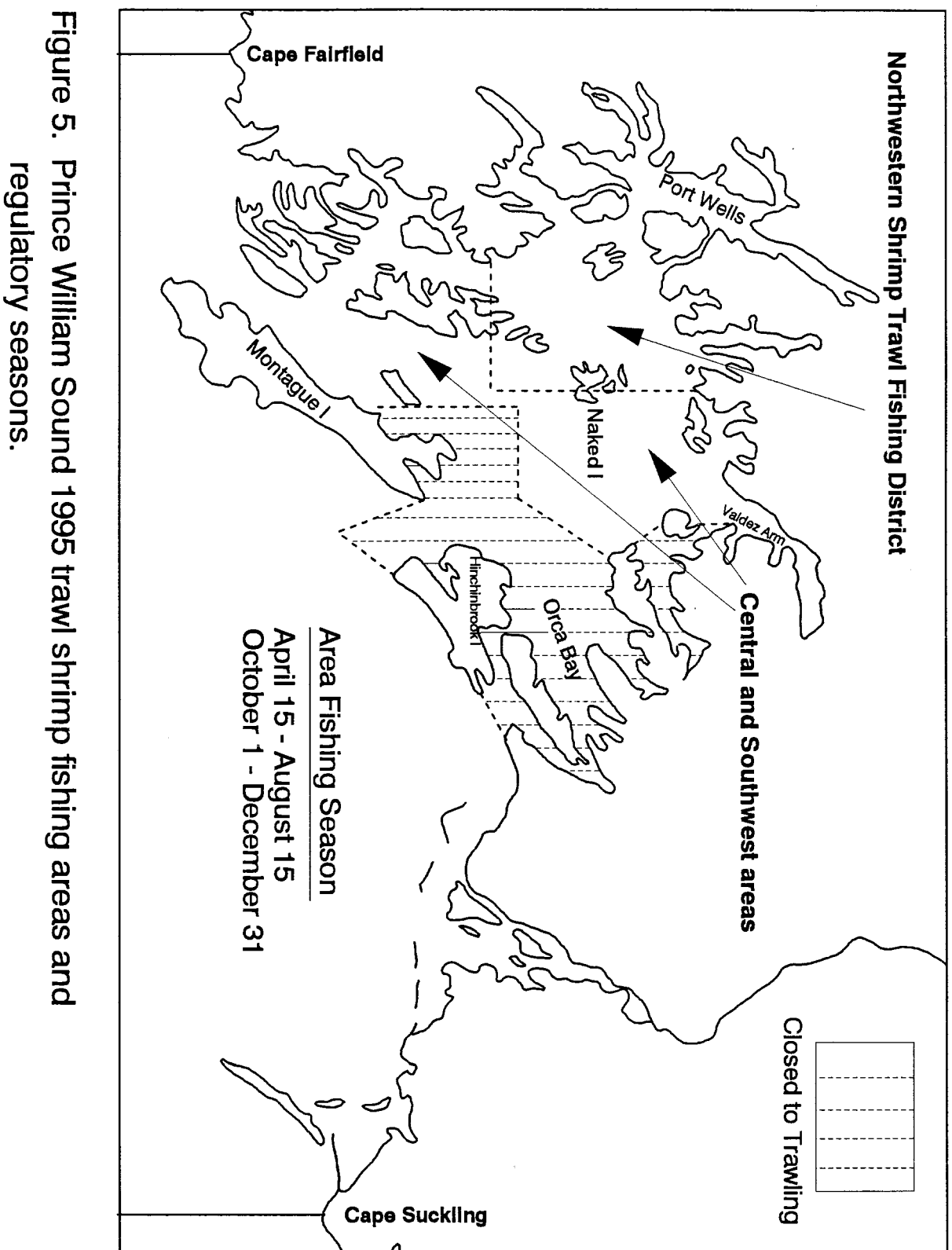


Figure 5. Prince William Sound 1995 trawl shrimp fishing areas and regulatory seasons.

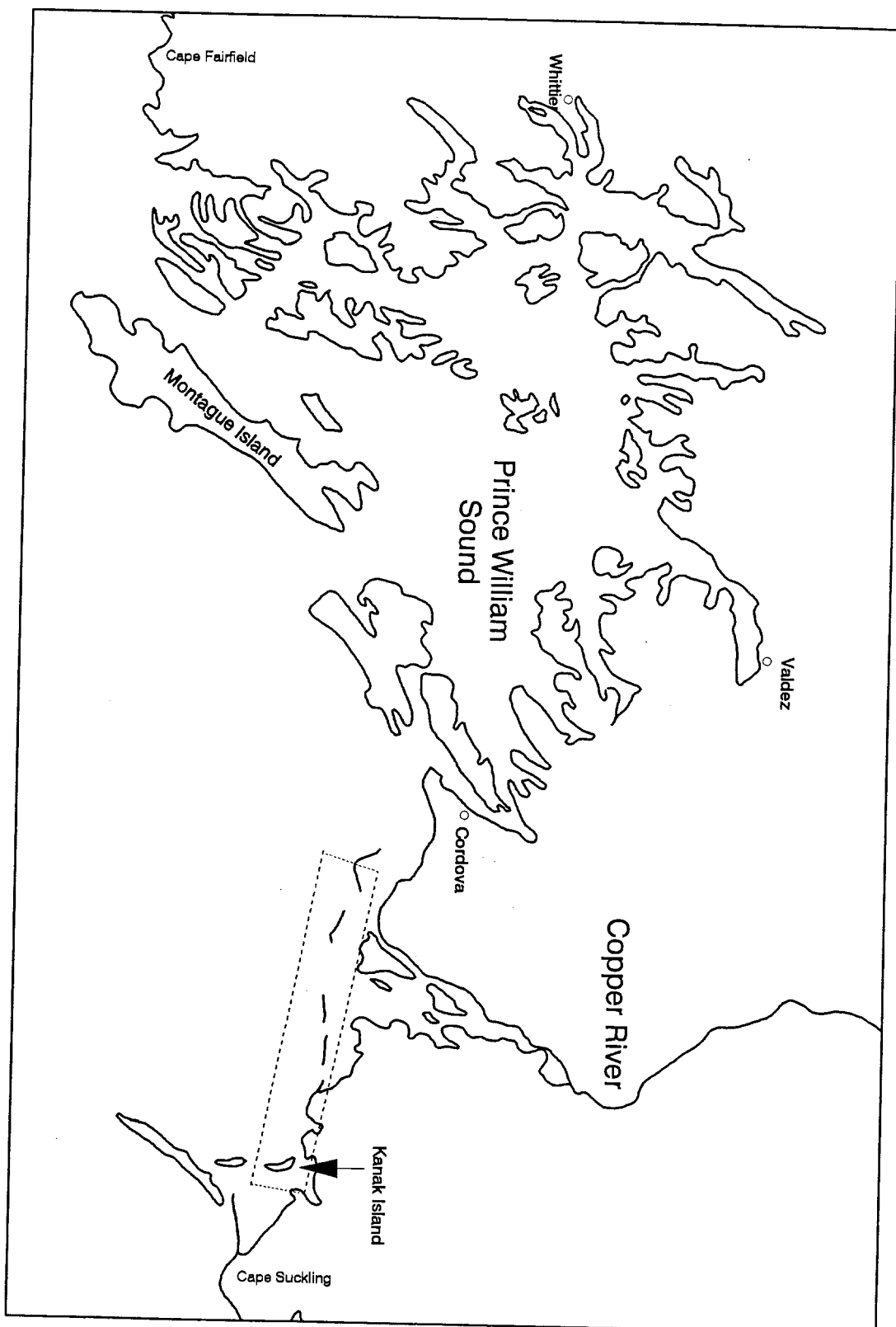


Figure 6. Copper River Delta razor clam harvest area.

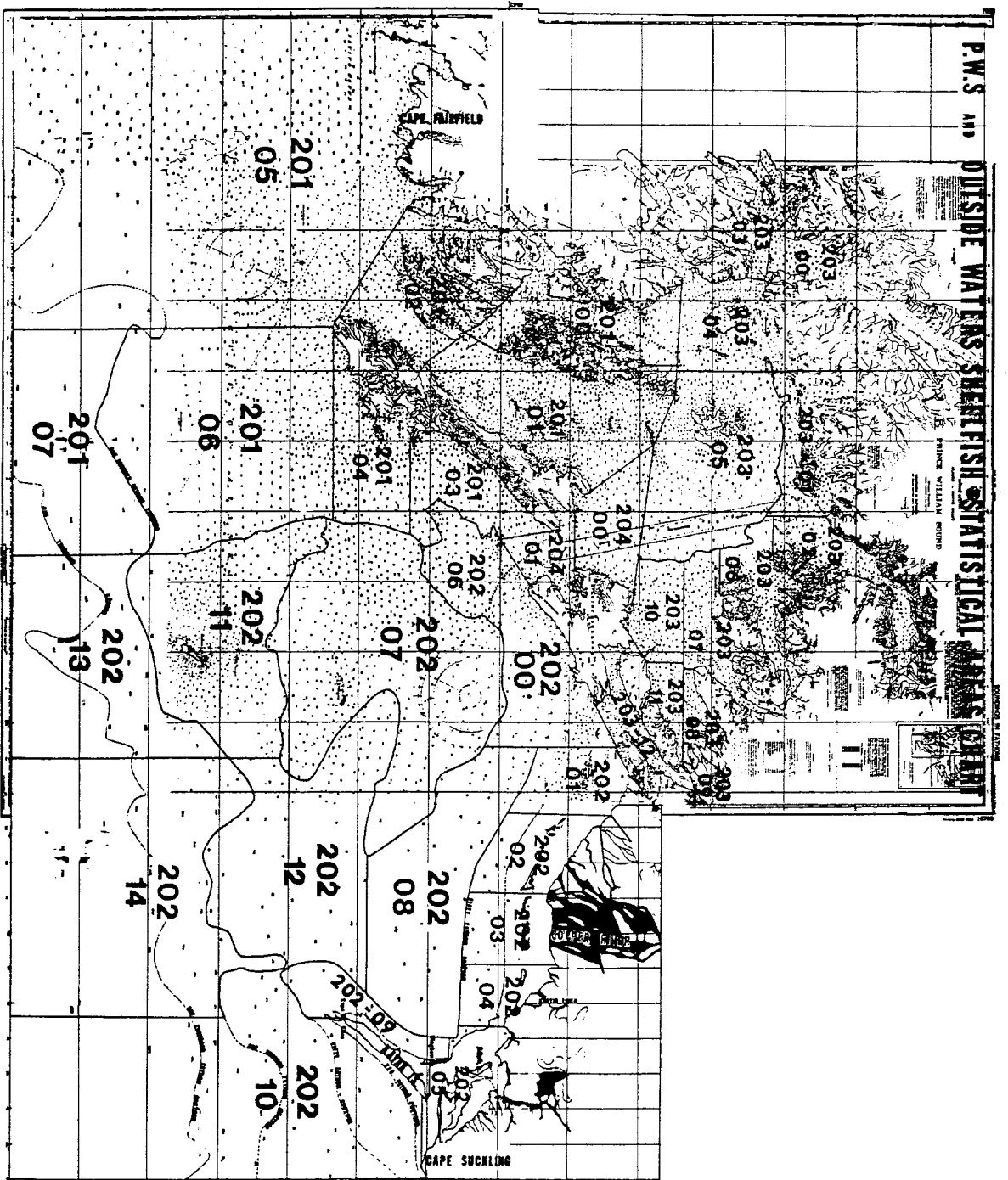


Figure 7. Prince William Sound and outside waters shellfish statistical areas chart.

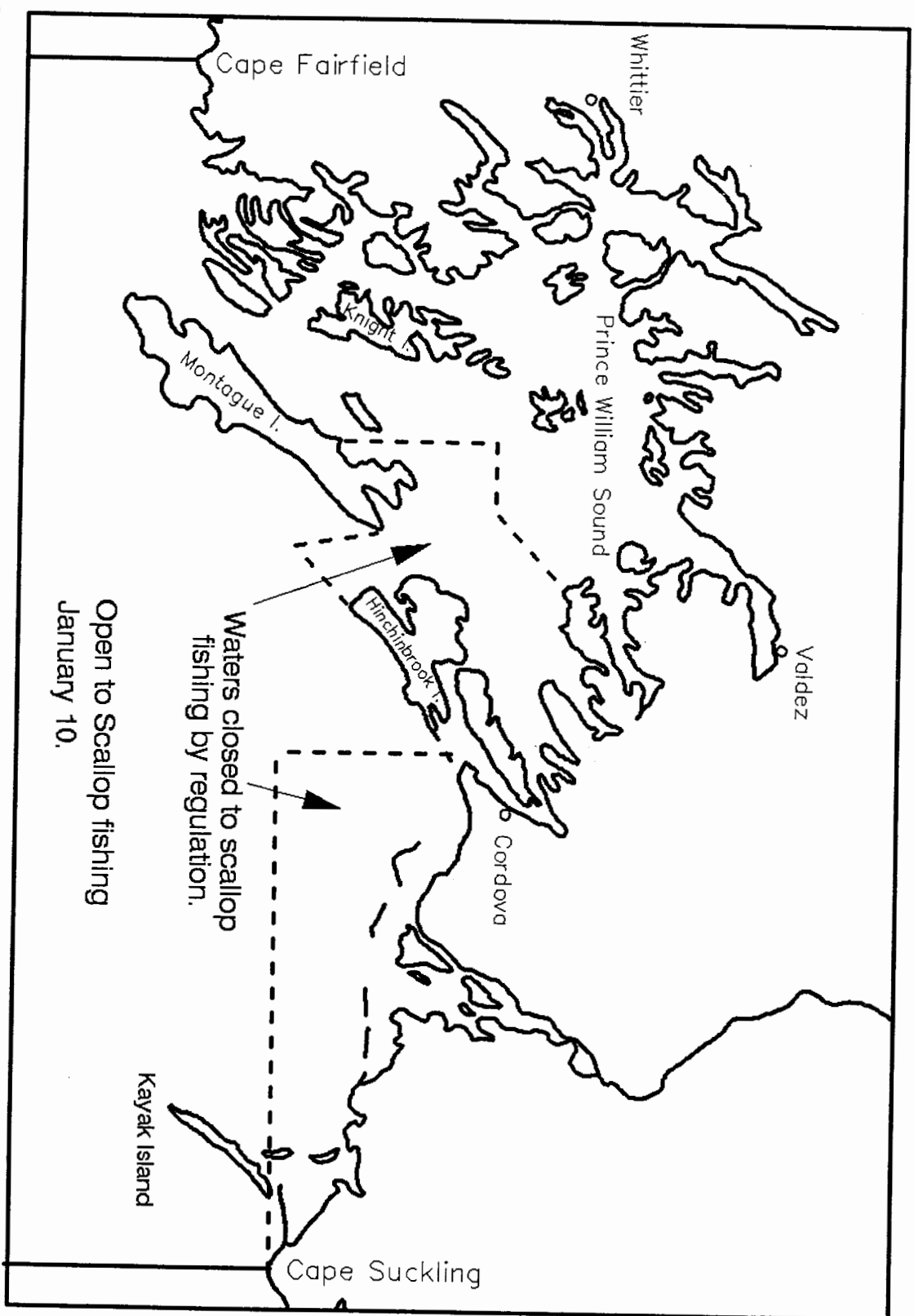


Figure 8. Prince William Sound scallop fishing areas and season date in 1995.

**Appendix A. Prince William Sound Area historical Tanner crab catch in pounds, by season
1968 - 1995.**

Season	Inside		Outside	Total	Vessels	Lndgs	Percent recruit	Avg. wt.	Number of crabs
1968-69				1,235,613					
1969-70				1,284,597					
1970-71				4,159					
1971-72				7,788,498					
1972-73				13,927,868					
1973-74	1,658,000		8,500,000	10,158,000					
1974-75	1,187,000		2,667,000	3,854,000					
1975-76	3,322,482		3,810,262	7,132,744					
	Northern	Hinchinbrook	Western	Eastern					
1976-77(1)	782,048	766,650	701,725	70,925	2,321,348	23	316		
1977-78	994,721	1,161,831	2,079,549	570,573	4,806,674	38	591	2.2	2,184,852
1978-79	649,977	708,562	2,248,545	3,443,471	7,050,555	51	783	2.1	3,357,408
1979-80	140,228	332,583	1,462,059	4,057,847	5,992,717	49	561	2.0	2,996,359
1980-81	152,196	812,352	1,561,207	250,076	2,775,831	30	304	2.1	1,321,824
1981-82	351,139	722,834	1,503,253	288,425	2,865,651	29	216	--	----
1982-83	471,422	31,447	921,663	45,308	1,469,840	40	304	2.1	699,924
1984 (2)	Closed	Closed	Closed	No Effort	0	0	0	--	----
1985	Closed	Closed	No Effort	No Effort	0	0	0	--	----
1986	137,720	236,241	160,829	587	535,377	14	35	26	2.1
1987	152,834	222,052	196,246	0	571,132	23	65	51	2.1
1988	55,929	226,509	191,654	0	474,092	21	46	34	2.1
1989	Closed	Closed	Closed	Closed	0	0	0	--	----
1990	Closed	Closed	Closed	Closed	0	0	0	--	----
1991	Closed	Closed	Closed	Closed	0	0	0	--	----
1992	Closed	Closed	Closed	Closed	0	0	0	--	----
1993	Closed	Closed	Closed	Closed	0	0	0	--	----
1994	Closed	Closed	Closed	Closed	0	0	0	--	----
1995	Closed	Closed	Closed	Closed	0	0	0	--	----

(1) New districts established and first season of the minimum legal size.

(2) Calendar year season established.

**Appendix B. King crab catch in pounds, Prince William Sound Management Area,
1960 - 1995.**

Year/season	Total pounds all species
1960	246,965
1961	236,081
1962	31,478
1963	43,569
1964	14,028
1965	5,500
1966	11,000
1967	41,800
1968	200,000
1969	48,100
1970	94,300
1971	144,200
1972	296,200
1973	207,916
1974	85,379
1975	53,423
1976-77	17,087
1977-78	86,595
1978-79	114,000

Seasons	S P E C I E S			Avg. wt. brown	Total pounds	Vessels	Landings
	Red	Blue	Brown				
1979-80	52,026	13,662	0		65,688	18	109
1980-81	32,433	7,282	20		39,735	14	65
1981-82	25,358	5,634	0		30,992	11	43
1982-83	30,809	10,433	147,016	9.7	188,258	31	187
1983-84	16,467	5,324	50,535	8.8	73,226	18	69
1984-85	235	closed	40,232	--	40,467	4	14
1985-86	closed	closed	51,800	5.8	51,800	4	11
1986-87	closed	closed	65,674	6.1	65,837	4	11
1987-88	closed	closed	68,270	6.6	68,270	4	15
1988-89	closed	closed	48,442	6.6	48,442	5	14
1989-90	closed	closed	closed	--	0	0	0
1990-91	closed	closed	2,180	--	2,180	2	2
1991-92	60	0	780	--	840	2	2
1992-93	closed	closed	closed	--	0	0	0
1993-94	closed	closed	closed	--	0	0	0
1994-95	closed	closed	**		**	1	**

(**) Harvest data is confidential due to the limited number of participants.

Appendix C. Prince William Sound Area Dungeness crab catch, 1960 - 1995.

Year	Copper River Pounds	Lndgs.	Vessels	# Crab	Avg. Wt.	Percent Recruits	Orca Inlet Pounds	Vessels	Northern District Pounds	Lndgs.	Vessels	Total Pounds
1960	---	---	---	---	---	---	1,524,326	---	---	---	---	1,524,326
1961	---	---	---	---	---	---	990,242	---	---	---	---	990,242
1962	---	---	---	---	---	---	1,353,190	---	---	---	---	1,353,190
1963	---	---	---	---	---	---	1,216,846	---	---	---	---	1,216,846
1964	---	---	---	---	---	---	1,290,929	---	---	---	---	1,290,929
1965	---	---	---	---	---	---	1,240,372	---	---	---	---	1,240,372
1966	---	---	---	---	---	---	999,341	---	---	---	---	999,341
1967	---	---	---	---	---	---	NO DATA AVAILABLE	---	---	---	---	NO DATA AVAILABLE
1968	---	---	---	---	---	---	579,279	---	---	---	---	579,279
1969	336,696	---	---	---	---	---	541,822	---	---	---	---	878,518
1970	78,223	---	---	---	---	---	660,411	---	---	---	---	738,634
1971	78,848	---	---	---	---	---	430,976	---	---	---	---	509,824
1972	437,865	---	---	---	---	---	286,808	---	---	---	---	724,673
1973	458,613	---	---	---	---	---	347,764	---	---	---	---	806,377
1974	290,149	---	---	---	---	---	269,015	---	---	---	---	559,164
1975	654,410	---	---	---	---	---	163,631	---	---	---	---	818,041
1976	254,933	---	4	---	---	---	35,399	3	---	---	---	290,332
1977	506,751	---	4	---	---	---	228,858	23	---	---	---	735,609
1978	1,319,451	---	12	---	---	---	648,439	34	49,571	---	17	2,053,461
1979	504,770	---	19	---	---	---	123,245	32	20,924	---	16	652,924
1980	659,667	---	10	---	---	---	CLOSED	---	31,152	---	5	690,819
1981	1,503,574	202	18	---	---	25	CLOSED	---	5,683	11	5	1,509,257
1982	757,911	139	16	332,417	2.2	26	CLOSED	---	4,221	4	2	762,182
1983	379,094	86	9	184,026	2.1	49	CLOSED	---	511	14	2	379,605
1984	826,778	88	10	413,394	2.0	92	CLOSED	---	150	2	2	826,938
1985	1,006,196	124	17	483,748	2.1	63	CLOSED	---	1,233	5	1	1,007,429
1986	1,090,477	105	16	531,940	2.1	58	CLOSED	---	0	---	---	1,090,477
1987	887,713	92	13	438,974	2.0	34	CLOSED	---	5,461	2	2	893,174
1988	602,969	48	8	298,569	2.0	52	CLOSED	---	0	---	---	602,969
1989	635,976	43	9	326,226	2.0	25	CLOSED	---	0	---	---	635,976
1990	397,913	63	17	196,266	2.0	36	CLOSED	---	0	---	---	397,913
1991	70,259	32	14	39,033	1.8	62	CLOSED	---	0	---	---	70,259
1992 (1)	2,458	5	2	1,229	2.0	n/a	CLOSED	---	0	---	---	2,458
1993	SEASON	CLOSED	---	---	---	---	CLOSED	NO	EFFORT	---	---	---
1994	SEASON	CLOSED	---	---	---	---	CLOSED	NO	EFFORT	---	---	---
1995	SEASON	CLOSED	---	---	---	---	CLOSED	NO	EFFORT	---	---	---

(1) Spring season only.

**Appendix D. Pot shrimp harvest, Prince William Sound Management Area,
1960 - 1995.**

Year	Vessels	Landing	W E I G H T (lb)			Total ¹ whole wt.
			spot	coonstripe	other	
1960						4,988
1961						---
1962						3,576
1963						1,101
1964						4,248
1965						4,356
1966						---
1967						749
1968						6,866
1969						5,146
1970						19,776
1971						13,073
1972						6,949
1973						6,370
1974						24,978
1975						4,150
1976						2,410
1977						7,516
1978	9	17	N/A	N/A	N/A	15,466
1979	17	98	N/A	N/A	N/A	52,208
1980	23	155	84,787	5,174	67	90,028
1981	51	509	153,017	20,055	465	173,537
1982	57	397	205,746	7,250	784	213,781
1983	71	646	198,719	14,119	583	213,420
1984	79	513	198,729	7,911	640	207,280
1985	78	528	271,928	3,919	860	276,707
1986	80	540	286,105	3,715	812	290,632
1987	86	498	265,707	3,795	151	269,653
1988	76	433	191,630	764	48	192,442
1989	33	69	28,884	431	0	29,315
1990	23	59	36,378	358	0	36,737
1991	15	45	17,302	278	0	17,580
1992	C L O S E D					
1993	C L O S E D					
1994	C L O S E D					
1995	C L O S E D					

¹ Catches converted from tail weight to whole weight using a conversion factor of 2.

Appendix E. Trawl shrimp harvest, Prince William Sound Management Area 1972 - 1995.

Year	Vessels	Pounds
1972		5,153
1973		4,243
1974		1,345
1975		26,961
1976		134,115
1977		170,757
1978	8	440,684
1979	4	634,518
1980	6	557,328
1981	4	70,560
1982	9	346,517

Year	Vessels	Landings	W E I G H T (lb)			Deadloss	Total
			Pink	Sidestripes	Other		
1983	13	46	420,275	1,058	2,345	—	423,678
1984	14	55	1,292,643	8,842	1,155	—	1,302,640
1985	6	44	432,514	15,696	440	—	448,650
1986	3	44	218,156	27,701	13	—	245,870
1987	2	109	275	95,043	440	—	95,758
1988	4	99	497	111,898	52	—	112,447
1989	*	*	*	*	*	—	*
1990	4	89	3,348	105,795	15	18,303	127,461
1991	5	67	3,453	84,483	193	51,429	139,558
1992	5	70	651	196,467	28	49,097	246,243
1993	7	72	23	190,976	51	55,140	246,190
1994	6	47	749	85,980	0	24,134	110,863
1995	4	39	0	73,706	0	24,189	97,895

(*) Catch data is confidential due to the small number of participants.

Appendix F. Razor clam harvest in pounds, Prince William Sound Area, 1960 - 1995.

Year	COMMERCIAL	Pounds	NON - COMMERCIAL	
	Diggers		Diggers	Pounds
1960		433,930		
1961		261,628		
1962		208,698		
1963		86,340		
1964		39,275		
1965		86,477		
1966		27,063		
1967		98,446		
1968		72,806		
1969		26,887		
1970		27,909		
1971		37,972		
1972		30,326		
1973		30,318		
1974		29,747		
1975		15,443		
1976		1,516		
1977	11	2,160		
1978	54	29,865		
1979	26	12,904		
1980	21	5,881		
1981	7	28,970		
1982	12	15,275		
1983	41	124,835		
1984	41	168,426		
1985	25	60,274	37	4,930
1986	17	13,122	38	4,831
1987	12	40,954	83	6,225
1988	4	6,766	52	2,768
1989	No Effort	0	50	2,903
1990	"	0	50	2,641
1991	"	0	77	1,484
1992	"	0	92	2,403
1993	Confidential	Confidential	37	1,131
1994	0	0	28	459
1995	0	0	14	92

1. A permit is required to harvest razor clams from the Copper River Delta for personal use, sport, or subsistence.

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